

6-16

17

The quarries ~~etc.~~ of  
Clarkson etc. S.W. of  
Patsdam 3 mi. show  
a compact redish brown  
sandstone that makes  
a fine building stone.  
Over the more <sup>compact</sup> massive  
layers there are several  
bands of rock in the upper  
quarry made up of cross-  
bedded layers that split  
out into very good  
flagging. The dip  
varies in the various  
~~exposed~~ outcrops but  
is chiefly to the N.W.  
The geologic interest  
is in the name, and in  
the excellent quality  
of the building stones.

Crazy Calaveras

Easton,

Wash Dc  
My

Mrs. Harick -

of  
Mr. Anthony -



9-15-87

Section of Calatagan - Chazy  
d - west side of Lower  
Hills. Calatagan Wash at N.Y.  
J. Hathaway's quarry &  
farm -

## Calatagan -

1. Gray Calatagan bed - 43' - 00'  
Dip - 22° E,  
S. N. 40°
2. Bone colored, compact.  
Is breaking with conchoidal  
fracture. It is massive  
massive & porous bed.  
Calatagan - 2' - 00'  
It is equal to White -  
Superior etc. aff. -  
see collection
3. Calatagan bed - becomes  
quartz to the north side  
and on the edge -  
varying in proportion  
of sand & lime - 240 - 00  
310 - 00

# Chazy.

18. The Chazy l- is much like that of no. 2. of the Carboniferous. The layers are massive. The only fossil noticed was Sperditiia fabulata.

1- Dense colored compact l- in massive layers alternating with layers 10" to 18" thick.

92. 0

This section is essentially of the same type as that in East Whitwell near the W & R. R.R. Track. ~~It is~~ ~~that of Bald Hill, where~~ ~~the latter is much~~ ~~changed by~~

The Bald Hill & Smith Basin sections are of about the same horizon but they are very much altered.



by the disturbance to  
compensate accompanying  
the fault line against  
which they abut -

(Inventor On the following  
page a note on the Inventor  
Terrene is added -

10-10-87.

At the Friends Meeting  
House about  $\frac{1}{2}$  mi. S. of  
2, 10th and 75 quarry section  
fossils occur in thin bedded  
blue & gray limestone. Both  
one interbedded in gray  
~~to~~ arenaceous sh.

18 species of Trenton  
fossils were recognized.  
(see collection -)

The strike of the sh-  
carries it to the east  
of the Chazy in the section  
but there is not any  
connection ~~the~~ a meadow  
separating the two exposures.

The highest rock in the  
section is the Chazy  
as far as determined.



M.C. 9-15-87-

• a little north of the station of Easton on the Gt. I. R.R. a quarry has been opened by the R.R. over the limestone extends up over the hill to the west, the dip S.W. dip changing to vertical by then to N.E. An excellent exposure in the limestone near the fault line.

Middle Cambrian fossils  
seen throughout the l-  
(See collection.)

The l- is the most massive bedded I have seen in the Cambrian. Many layers are over 10' thick & their edges turn to a reddish sandy rock by oxidation.

42  
210



11/1/86.

With Prof W.B. Wright  
examined south slope  
of Stissing Mtn - Hatcher  
Co. N.Y.

Dipgate St. N. 45° W.  
D. 10. S. W.

Fancy Georgia fossils  
in loose mass of  
bedded Prof. Dr. Hatcher  
the ledge. Crossed the  
sandstone to the Archean  
(a bedded green in layers  
standing near vertical  
St. N + S. dip 80° W.)

Same distance to the  
~~Point~~ sandstone

Archean  
Georgia Sch.



Anchean



75 to 100 feet of  
massive bedded  
sd - essentially  
the character of the  
Potsdam when a  
slightly calcareous  
sd, is reached carrying  
*Olerellus* as ophorids &  
a species of *Cananella* -  
?

25 to 30 ft of same sd  
& then a l - carrying  
*Hylithella* *media*.

Fine grained calciferous  
sd, ~~is~~ apparently

this is overlain by  
a shaly yellowish l. &  
then a redish brown  
compact slate just  
north of Stissing station  
a synclinal being  
formed by the faulting  
against the Potsdam  
River shales on the E.



east



10-2-26

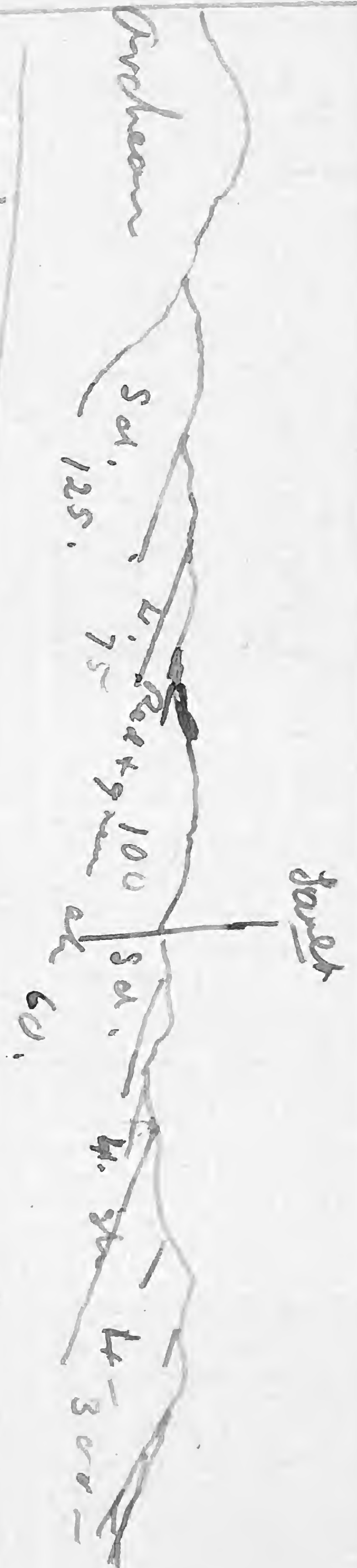
Recovered section from  
Ad - eastward -

2) The light colored  
arenaceous l-<sup>resting</sup> on the  
quartzite is well  
shown & is extended  
if not faulted occurs 75 ft

3) Reddish brown arg. l. &  
sil - shale passing  
into greenish bluffy  
sil shale 60.

4. Light arenaceous  
l- with dark  
bands 100

a fault lies here  
cuts the section  
hinging the ~~rest~~ 2d  
down against the l-



Mr Stearns rocks

Get 1<sup>st</sup> dist. N.Y.

h. 423

Footnote,

h. 436



Dawson, J.W.

Library of

On Canadian Examples of Supposed  
Fossil Algae.- Nature, vol. xxxiv, p. 514,  
Sept. 23d, 1886.

( A good paper.-C.D.W. )

S.E. of the second line  
of 2nd - the <sup>upper</sup> t - is thicker  
It reaches on - 300 feet



11-3-86.

N.E. of Mattawan village  
on the N.W. slope of  
Fishkill Mountain the  
Archean is seen along the  
base of the mountain &  
then crossing Mr C.  
Wolcott's farm a ledge  
of massive bedded  
slightly ferruginous <sup>compact</sup> schist  
slopes from the mountain  
with a dip of 50° N.W.  
strike N 70° 80° E.

At an old quarry  
amphibolite boulders were  
abundant in several of  
the layers & trails on the  
surface were observed.

Coarse siliceous l -  
occurs to the N.W. and  
then a narrow belt  
of Archean with red  
& greenish schists in



connection with the  
common type of shale  
of the Hudson River  
formation - Argill-  
shale stained with  
iron & contained small  
lenticular masses of  
arenaceous rock -  
The l- red to green  
shale is essentially  
a repetition of the  
stunning Mt section &  
unless there is paleontologic  
proof of the age of  
the rocks in that section  
above the quartzitic sd  
& first limestone, I  
should place them  
in the Hudson River  
formation -



10-28-86.

With Prof. W. B. Dwight  
examined the Potsdam  
limestone south of  
Poughkeepsie described  
by him.

The l-s are arenaceous  
& cherty usually having  
very much the lithologic  
appearance. In one of the  
outcrops observed where  
the underlying strata  
appear. The Potsdam  
appears to pass to the  
Calceferous & that to the  
Trenton as all occur  
within the same region.

Prof. D. has accomplished  
~~some~~ very difficult work &  
deserves great credit  
for the good results obtained.

Potsdam fossils of  
Dutchess Co. N.Y. Collection  
Prof. Wm B. Doughty

At Vanick's road <sup>near</sup>  
of Vassar College  
a califerous ad - gauge  
pty - Saratogaensis -  
" Califerous and  
4 - acuminata in  
abundance -

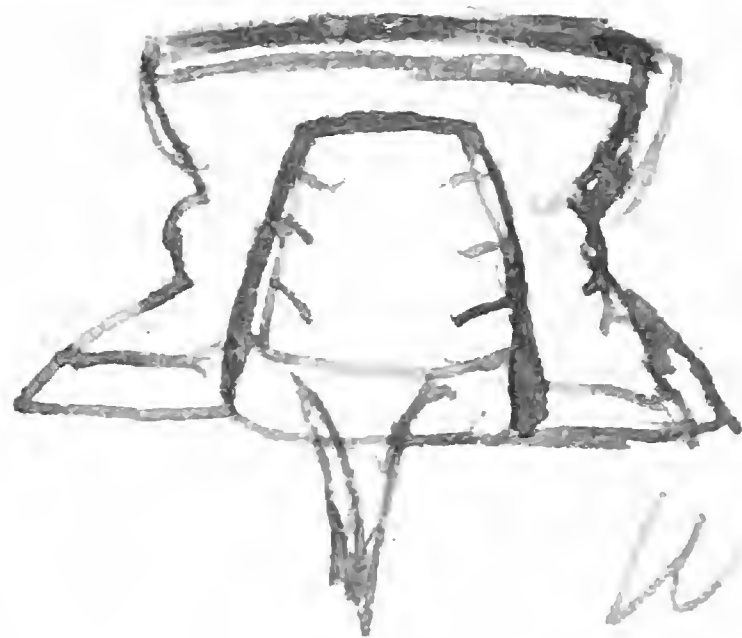
Pty - Saratogaensis  
shows both the smooth &  
furrowed glabella & also  
very large heads for  
the species -

Pty - Califerous gives  
large heads & a wide  
range in size - A long  
slender cheek spine  
may belong to another  
species





Pity - spirula - (Name proposed  
by Prof W.B.D.) which  
like P.



of the Wisconsin  
Potsdam.

Platyeros?



More Atrypa-like  
than Platyeros - "  
Bellerophon - "  
Miller form of Kentia type -

Angulifera pinnatifida.  
Think there is little if  
any doubt of the perfect  
identity of Specimen  
from Miller's form  
with those from Wisconsin



The L. acuminata  
appears to be the same  
as the L. pinnatifida

---

Large dark Abella



Labelled L(0) prima

---

Doubtfully prima but  
may be old <sup>large</sup> shells

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Lingulepis minima  
A small 00 shell such  
as the young of L. acuminata  
might give  
fair specimen

---



10-29-88.

Prof. D's Collection -

Pty - speciosus - Walcott  
occurs in great abundance  
on Smiley's farm.  
Heads & pale cheeks &  
a few tails.

J. Buchanan

10-20-87

Ante or Cleavelin? asaphoides

To day I found at the  
typical locality a spec-  
imen of this species that  
shows it to belong to a  
genus distinct from  
Cleavelin. The pygidium  
is that of Paradoxides  
& the entire animal is  
Paradoxides except in the  
configuration of the last  
5 or 6 segments.

The thorax has 18 seg-  
ments & the pygidium is  
of the type.





It is an unusual form  
of like Mesonacis  
Bermatensis suggests a  
connection from the true  
Pseudogobius -

*Abneltia asophodes* (2)

$\frac{1}{2}$  mile to the north  
the same band was  
traced to another station  
<sup>500 feet</sup>  
<sup>20 feet</sup> contained the  
same character of  
limestone & to the  
west about 700 feet  
lower in the section  
another band of 20  
to 30 feet was observed  
that contained the  
same fossils -

Some anemones  
was seen about  $\frac{1}{4}$   
~~half~~ mile west of  
the limestone -  
The distance across the  
strike is about 5 miles  
from Reids to Lefts -





5-12-85

1

Stockport N.Y.

With S.W. hand examined  
section of Georgian  
group from near Stockport  
Chapel mill at lower dam  
of Kudenhook creek to  
upper dam at Eureka  
mill. At the base

a great thickness of  
greenish drab or argillaceous

- 1) shale (2000 feet)
2. Gray limestone with shale,  
limestone both even bedded  
& beccata 50 ft.
3. Argillaceous bluish  
gray shale with harder  
arenaceous layers at  
intervals 800 ft.
4. Even bedded & beccata  
limestone with *Abolles*  
*hirsallia ovalata* 25 ft.



2875

5)

(2)

Dark grayish argil-  
shale becoming harder  
more compact towards  
the summit. 1200.

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Barrande on Buff Tarn  
Bull. Geol. Soc. France  
1868,

---

Agnostus nobilis.  
Copy drawing

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Dec. 1881.

Fray Cambrian

*Bathotryphus flexuosus* H

*Archaeocyathellus Rensselaerensis*, Fench

*Escharopora*

*Lingulella costata* (Hall) F.

*Iphidea bella* Billings

*Abolella crassa* H

*Nucula* & *Strophomena*

*Stenotheca rugosa* H

*Hyalothellus micans* Bill

" *Americanus* "

*Microdiscus lobatus* (H)

" *speciosus* Fench

*Ocellular asaphoides* W

New Brunswick, St. John's Co.

*Microdiscus Dawsoni* Horth

*Agnostus Acadicus* "

*Canacephalites Robbi* "

*formosus* "

*Matthemi* "

*Baileyi* "

*Anestes* "

*Quanganichianus* "



Fossils of section on the above Brockton 9

Crinoid stems 18 in  
Bryozoa 25  
Measure concealed 50.

Trilobite limestone Top of falls 100.

" " 105.  
" " 17-257

Measure concealed 24.

Utica Slate 52-333

Fossils characteristic of strata to top of falls.

Stenopora, pithos u. S. lycoperdon. ~~Ptilotrypa acuta~~, Lingula quadrata,  
obliqua. S. attenuata, Trematis terminalis, Ucinia Pelopea, Le. spem.  
Septacna sericea, Strophomena alternata, Orthis testudinaria.  
Ucinia levata - dubia, Nucula fortetria, Bellerophon  
lobatus, Pucania punctifrons,urchinaria gracilis, <sup>U. plicata</sup> leucitaria  
Andoceras proteiforme, Glyptolites primitus,  
Calymene senaria, Trinucleum concentricum, Asaphus gigas, C. p.

From top of falls to the base of the Utica

Slate at road crossing. Near top of falls, Stenopora

pithos u. S. lycoperdon, Lingula quadrata, Septacna sericea,  
Strophomena alternata, Orthis testudinaria, Trecholites  
annularis, B. plicatus, Andoceras proteiforme, Helicotoma  
simplex, H. latus, Asaphus gigas, A. megistos, C. senaria.

Near the top of the Trenton the following species

were found,  
Leptocera serrata, P. parvula, C. Hoffmanni, Tellingpriza  
obliqua, Leptodonta, Glyptocrinites, Asaphus gigas,  
Calymene senaria.



Sections taken on Trenton Group. 1875.

Buck's Quarry, Russia, Herkimer Co. N.Y. North & South  
Birdseye resting on upper stratum of the Calciferous.  
exposed on side hill south of quarry. Weathers  
yellowish brown at base. fracture conchoidal,  
lead colored. Surface of layers smooth with  
numerous remains of <sup>some what mixed</sup> *fucoidea* with *calciferae*.

Fossils

ft in  
13. 5

Succeeding layers to quarry the characteristic  
Birdseye limestone.

34.

Fossils.

Quarry thin and massive layers to base of  
Blk. R. limestone. Mark of separation, lithologically  
clear and distinct.

Fossils.

11. 4  
58. 9

1 Blk Runic Limestone. A band of layers 2 ft  
thick divided into layers but thick mostly the  
base. The fossils are numerous. Rock dark 2.  
~~Massive~~ with acanthoidal fracturing. In places  
a black flint like rock occurs in patches of small  
extent.  
Fossils,

Above this band massive layers are exposed  
9.4<sup>in</sup> thick. Numerous remains of <sup>14. in</sup> 9.4<sup>in</sup>  
orthoceratites mark the upper surface  
of the two top layers. Strata above concealed  
by drift. Fossils noticed in this portion.



Note on Permian Fossils.

Feb 1880.

The form referred to Allorisma which has the two carinae running from the umbilicus to the posterior margin and a strongly marked anterior & posterior muscular scar. is placed in the genus provisionally as it departs from the typical form of Allorisma.

Rathbone Brook, New York, Herkimer Co. N.Y.  
North East to South West.  
Strata dip south.

July 21/95

20 to 25 feet of Birdseye resting on calciferous  
exposed along bank of West Canada Creek.

Measures concealed beneath the mountain  
to the foot of the hill about 50 feet of  
strata. 25 of elevation.

Gray & black even bedded thin layers to near  
top of hill, where there is a blue calcareous  
band. 5 to 8". Elevation about 60 feet of strata.

Characteristic rock of Trenton limestone  
exposed at Trenton Falls to bridge crossing  
road near top of first hill, 83.4. Elevation  
Strata, 100 (approximate).

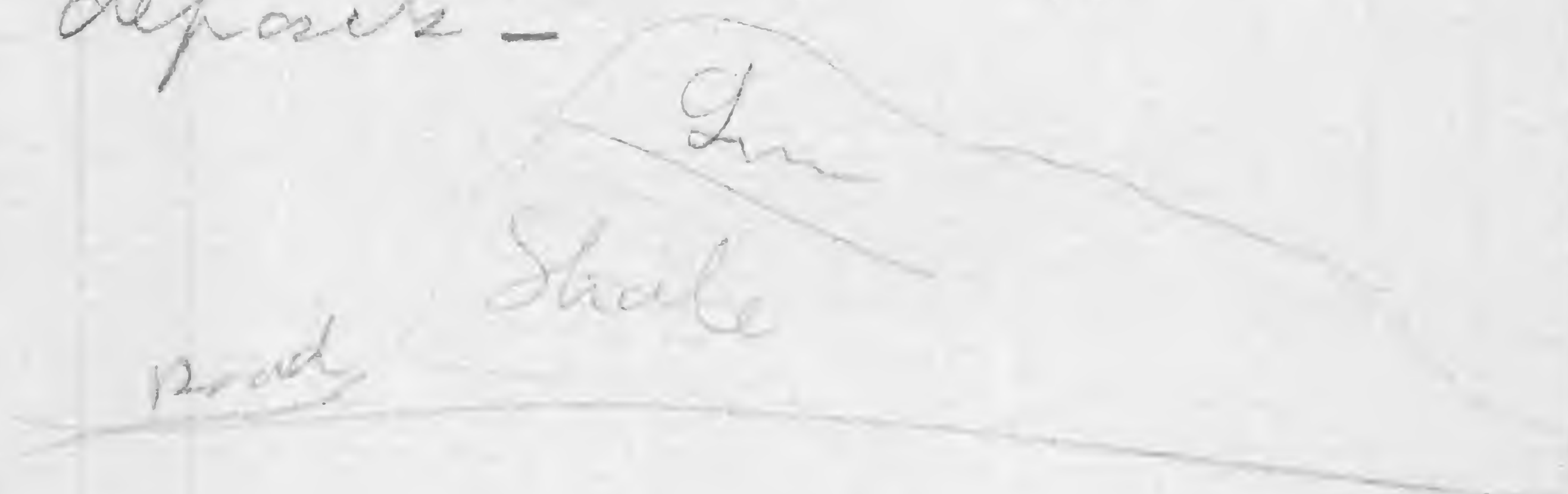
From division of brook above bridge 17 feet  
of limestone is exposed, of a lighter colored  
semi-shaly, unevenly bedded, alternating  
with layers of gray limestone 1 to 3 in  
thick. Measures concealed 24 feet.

Blue slate, interbedded with layers  
of semi-calcareous blue limestone, 3 to 5  
in thick. 40 or 50 feet of slate exposed.



19-5-86.

About  $2\frac{1}{2}$  miles east of  
Whitehall - just north of  
the RR. track the argill  
shales appear beneath  
the Chazy limestone. Much  
as Popple nest in Vermont -  
This some says off shore  
deposits -



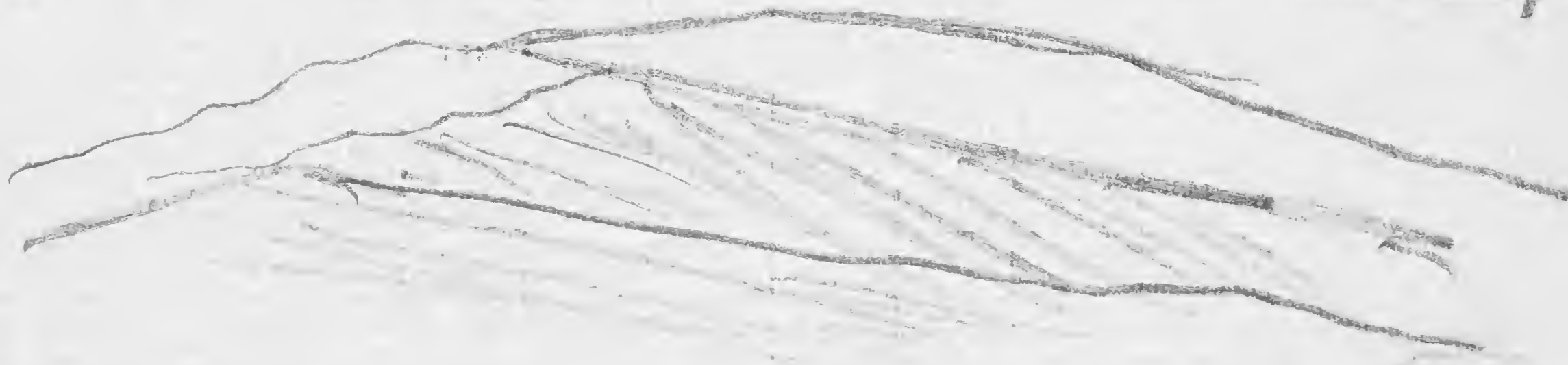
Shales beneath Lm  
in Whitehall

July 31<sup>st</sup> 1890

Section West of Whitehall.  
Below "Death Rock".

Cross bedding in gneiss

20 feet





Calceferous ) 10 - 4 - 89.

Examining the Calceferous  
terrace 2<sup>mi</sup> N.N.E. of  
Whitehall adjacent to the  
Poultney River.

The cliff rises 420 ft above  
the river & its slope to  
the eastward is about  
100.



The probable position of the

700 ft. Calceferous  
& Potsdam ~~feet of contact~~  
~~at the base of the~~  
~~to the Potsdam -~~

The next ridge west  
may be ~~no~~ formed by a  
monoclinial uplift. &  
so with the second

Height of cliff above sea

426 feet



Dromedary name found  
 at the base of the first  
 cliff - or ~~at the~~ one facing  
 the river, in 1886. see  
 collections.

see notes on *Neotoma* sections 1887.  
 4/1886.



✓

Lectra at Whitehall  
N.Y. below lower  
lock of Canal.

1) Massive bedded compact  
dark steel gray sd -  
almost a quartzite 25.

2. Dark clay shale .6<sup>in</sup>

3. Bluish-gray brecciated  
limestone .6<sup>in</sup>

4. Fine grained compact  
steel gray sd 1.

5. Compact arenaceous  
l- 3.

6. Compact, fine gr. steel  
gray sd. on layers  
of 16 to 2 feet. Partings  
of coarser sandstone  
& on all flattened

30



clay concretions occur.  
 Also streaks of lighter  
 colored sand in the  
 layers + cross bedding  
 is of common occurrence.  
~~in the layers.~~

Ameltd tracks on the  
 surface of some of the  
 layers.

14.5

(St. N. 30. E. Dip. 68 E)

5. Calcareous sd. - in one  
 layer

2.7

6. Repetition of 4  
 crossing of road.

20.0

7. Thin bedded sd & clay  
 shale

1.3

8. Compact gray bluish-  
 fine gr. sd. streaked  
 with dark sd. & shaly  
 matter. Slightly calca-  
 reous in places.

16.6

84.9

451

149 #2



9)

Burlford  
84.9 (3)

Dark gray calciferous  
layers weathering to a  
reddish brown sd  
Ammonite trails & borings.

2.0

10) Gray compact sd

1.3

11) Same as 9.

1.4

12, Hard compact gr  
sd - in even bedded  
layers -

59.8

This is typical Palston  
sd. Layers 6 in to  
3 ft. Top is near crossing  
of private road here.

13, Sandstones similar to

12 but with <sup>a few</sup> altera-

ting calcareous sd

layers - the calcareous

matter decomposing &amp;

leaving streaks of reddish

brown rock in the layers 149.0

St of 13 - N. 25° E.  
10 1/2 10° E.

The ~~soft~~ light gray  
compact - l. - with the  
little flattened concretions  
of clay & the cross bedding  
gives this portion of the  
section a striking reser-  
blance to that of the  
upper 150 feet of the  
Hessville section.

found  
13  
Abou - 30 feet  
Palaeacmea  
Cylind. Water.

Pipple marks occur  
on the surface of many  
layers & are visible  
in the calcareous  
strata.

113.0

14. Lead colored  
calcareous sd -  
weathering rough.

5.0

15. Alternating gray

267.0



41  
205.

compact fine  
grain sd, reddish  
coarser sd & finer  
calcareous sdy  
layers.

70.

Lingulid antiqua  
+ Ptychoparia sp?

occure in the upper  
layers, about 75 ft up.

Calcareous —

937.

16. Calcareous sd - with  
a massive bedded  
light <sup>gray</sup> compact sd  
at top 10 feet thick

40.

The last upper 30 feet  
of 15 & all of 16 may be  
regarded as the  
passage beds to the  
Calcareous sd above.



Lead colored,  
massive bedded  
calcareous sd -

230 -

6. Lead colored bedded  
limestone overlaid  
by a compact light  
gray l -

20.

---

250.

Section at Whitehall, N.Y., below lower lock of canal.

	Ft.	in.
1. Massive bedded, compact, dark steel-gray sandstone, almost a quartzite, . . . . .	25	
2. Dark clay shale, . . . . .	6	
3. Bluish-gray brecciated limestone, . . . . .	6	
4. Fine-grained, compact, steel-gray limestone, . . . . .	1	
5. Compact arenaceous limestone, . . . . .	3	
6. Compact, fine-grained, steel-gray sandstone, in layers of 6 in. to 3 feet. Partings of coarser sandstone and small, flattened clay concretions occur, also, streaks of light-colored sandstone in the layers, and cross-bedding is of common occurrence, . . . . . Annelid trails on the surface of some of the layers. Strike, N. 20° E.; dip, 6° to 8° E.	14	5
7. Calciferous sandstone in one layer, . . . . .	2	7
<del>8. Compact, fine-grained, steel-gray sandstone, in layers of 6 in. to 3 feet. Partings of coarser sandstone and small, flattened clay concretions occur, also, streaks of light-colored sandstone in the layers, and cross-bedding is of common occurrence, . . . . .</del>		
8. Fine-grained, compact, steel-gray sandstone, . . . . .	20.	
9. Thin bedded sandstone and clay shale, . . . . .	1	3
10. Compact gray and purplish fine-grained sandstone, streaked with dark sandstone and shaly matter; slightly calcareous in places, . . . . .	16	6
11. Dark-gray calciferous layers, weathering to a reddish-brown sandstone. Annelid trails and borings, . . . . .	2	
12. Gray compact sandstone, . . . . .	1	3
13. Dark-gray calciferous layers, weathering to a reddish-brown sandstone. Annelid trails and borings, . . . . .	1	4



of the chert and etc

14. Hard, compact gray sandstone, in evenly-bedded layers of six inches to three feet in thickness. ~~This is~~ typical Potsdam sandstone. Top is near crossing of private roadway, . . . . . 59. 8

15. Sandstones similar to 14, but with a few alternating calcareous layers; the calcareous matter decomposing and leaving streaks of reddish and brown rocks in the layers. *J* Ripple marks occur on the surface of many layers, and Annelid trails on the calcareous strata. About thirty feet up found Palaeacmea typica, H. & W. Strike, 25° E.; dip, 10° E. The light-gray compact limestone, with the little flattened concretions of clay and the cross-bedding, give this portion of the section a striking resemblance to that of the upper 150 feet of the Keeseville section. 113.

16. Lead-colored calciferous sandstone, weathering rough. 5.

17. Alternating, gray, compact, fine-grained sandstone, reddish coarse sandstone and finer calcareous sandy layers. *accumulata*  
Lingulepis antiqua and Ptychoparia sp.? occur in the upper layers, about forty feet up. . . . . 70.  
337.

Calciferous.

18. Calciferous sandstone, with a massive bedded, light-gray, compact sandstone at top 10 feet thick. . . . . 40.  
The upper thirty feet of 17 and all of 18 may be considered as the passage beds to the Calciferous sandstone above. . . . .

1. Lead-colored, massive-bedded, calciferous sandstone, . . 230.

2. Lead-colored, brecciated limestone overlain by a compact light-gray limestone, . . . . . 20.  
250.

M.C.I

9-14-66.

p.m.

Fossils in l-belt about ~~2~~ 2 1/2 miles E of Northgreenwich,

*Stenotheca rugosa* -

*Jurichia Grayensis* -

*Hyalithea Americana* -  
Common.

*Hyalitella micans* -

*Microdictya speciosa* -  
" (Halls - sp.)

*Solenopleura nana* -

*Abella asaphoides* -  
9th.

Fossils in Limestone (Coog)  
2 mi' N.W. of N. Greenwich.

*Abella* -

*Stenotheca rugosa* -

*Platyceras* -

*Jurichia Grayensis* -

*Lepidodictya* -

*Microdictya bilobus* -

*Abella* -

*Solenopleura nana*



7112

8-11-86.

Up the Mettensee Run  
from N. Gravelle -

Slate, shale. Sandstone  
mile after mile - all dipping  
east

At 2 P.M., discovered  
Microchirus speciosus of  
the Middle Cambrian  
on the hill <sup>W. of</sup> the  
river about 1 <sup>1/2</sup> miles from  
Middle Gravelle

Also  
Hyalithellus micans.  
Lingulella —  
Salenopleria nana.

Top of underlying slates  
402' ±

Stk 1175,



8-13-86  
About 2 1/2 mi N. of N. G. Grindle.

The red slates <sup>apparently</sup> are succeeded  
by dark-slates, interbedded  
Calceferous Sd rock - dark  
slates - purple slates + then  
a belt of shaly S - 45 to 50 ft -  
St N. 40° E dip - 40° - 45° E.  
Fossils - Tordilla fragilis -  
Stenotheca rugosa - Hyalites  
Americanus - H. communis -  
Microdiscus speciosus, Obolus  
asaphoides.

All the deposits in the  
shale (sandstone, l-sls)  
are in the form of lentils.  
A band of quartzite  
red - weathering white  
appears in the slates  
about 300 feet east  
of the l-band

(over)

The limestone appears  
in the road just north  
of Robert Hall's  
purple slate quarry

---

10-9-86

More recent observations  
show the existence of a  
fault line between the  
red & purple slates. The  
red being referred to  
the Silurian (Hudson River)  
& the purple to the  
Cambrian



2 miles south  
of N. Granville an irregularly  
bedded ls in the shales  
zone.

Lingulella? -

Microdiscus speciosus

" " ? N. sp.

Solenopora plana

Ptychopora sp.?

H. - means

H. - american

O. asaphoides -

Lodolia Loxensis -

Lepidodictia sp.?

~~Protodus~~

~~Alenoides~~

~~Acrotreta~~

See collections - for complete  
list.

The bed of L is about  
100 feet thick replaces  
S. aptaids S - 2 miles  
crossing the S.W. road  
at the old <sup>east</sup> slaty quarry  
on the Northrup farm.

at the purple slate  
quarry S. of Middle  
Granville found  
A - micans.  
M - speciosus  
Q. Asaphoides.

---

Noticed more interbedded  
limestones than usual.  
Altho the becciated &  
conglomerate predominated.



9-30-86,

Two miles N. of N. Granville.  
on east road from the  
Whitehall road Center in  
l- occur carry.

H - micans

M - speciosa.

Q - asophoides.

St. N.  $10^{\circ}$  W. 21h.

Rock mostly dark argl -  
shale

M.C.T. in Whitehall (1) on  
map.

Merodiscus speciosa

Alenellus

Lingulepis.

at this point the Chazy  
l & Center are separated  
by about 300 feet distance

the interval being filled  
in by shales of the  
Carboniferous.

About  $2\frac{1}{2}$  mi E.E.S.  $10^\circ$   
from Whitehall a contact  
between the Chazy & Carboniferous  
may be observed or at  
least within 10 feet.

M.C. No. 2. 2. in Whitehall  
given the same as No. 1.

M.C. No. 1. = Recognized  
Middle Carboniferous fossils -  
A species of *Microleissus*  
*Hyolithellus* - *Alveolites* -  
usually one, two or  
more as the case may  
be.



The purple beds on  
Thomas Bangs form  
alternate with green &  
lenticles of sandstone.

These are essentially the  
same belt as that worked  
for slate in North Pultney  
& South Costleton VT.

---

Middle Cambrian in  
E. Whitehall

M. C. L.

10-5-86.

Crossing from Fair  
Haven VT into Hampton  
at Long Hampton a band  
of limestone interbedded in  
dark shale is met with.  
In the limestone *Obolus* &  
*Solenopora* occur - A  
short distance west a  
thick band of limestone  
contains *lanceolata* occurs in  
which fossils are abundant  
*Alveolites* as *apophyses* etc -  
(See collection)

---

Also towards Whitehall  
found, *Alveolites*  
*Ptychopora* and *Solenopora* -  
*Hyalithellus* -  
See Whitehall section of July.



M. C. F. in Easton  
+  
~~Fault Line~~

South of the Batten Kill  
in Easton about 1 <sup>mi</sup> S. S. W.  
of Greenwich up an ~~average~~  
hill from a P. (Atop)  
truncatus + A. asaphoides  
in a dark shale slate.  
To the west a great  
considerable thickness  
of Calc-sand occurs  
as on the Reid farm  
section & then the  
disturbed rocks indicate

the approach to the  
fault line between  
the Cam. & Avalonian  
&  $\frac{1}{8}$  of a mile west of the  
Y. & G. R.R. track.

The fossiliferous shales  
one and a half by rough  
sandy shales



Fossils in the green  
slates of the eastern  
belt.

but it may be  
• Hudson River. Latten  
work refers it to the Camden.

In the N.E. part of the  
Tongue of White Creek  
a limestone bedded  
on the greenish talcose  
slaty schist contains  
*Alveolus araphoides*  
*Salenopora*.

This is a most important  
locality as it is fairly  
within the Magnesian  
slate of Emmons Locality  
& the talcose series of  
Hitchcock. The locality  
comes hands in position  
to that on the north  
side of the Batten Kill  
below the mouth of  
Camden Creek.

These localities & those  
to the north west of Salem



village fairly place  
• the great deposit of  
green slates & talcose  
chaly rocks up to the  
base of the limestones  
in the Cambrian. The  
upper portion corresponding  
to the Potsdam horizon  
of the Adirondack &  
Glutches cr. areas.

Crossing into Vermont  
& returning over the  
mountain via the north road  
entering White Creek the  
strike of the talcose green-  
ish beds is north  $40^{\circ}$  E to  $50^{\circ}$   
E. & 8 mi east of Cambridge  
Middle Cambrian fossils occur  
in gray limestones interbedded  
in the green talcose shaly  
rocks - The strata strike  
N.  $40^{\circ}$  E. & dip from  $45^{\circ}$  to  $60^{\circ}$   
E.

---



9.27.86;  
Western fault line  
of Cambrian.

The fault that cuts thro' the western face of Bald Mt. extends to the north-east cutting thro' the next <sup>high</sup> westward facing hills near their summits & then extending along their western base of the high hills until past Argyle where it ~~cuts~~ passes back of the hills between North Argyle & the Hook to the high hill on the extreme N.E. corner of the township of Argyle. It again approaches the western edge of the hilly country a mile south of North Hartford passing very close to the town.



10-15-86.

• The fault line between  
the Camb. & Ord. on the  
west side of White Creek  
valley from Cambridge  
south to the Horse river  
passes west of the turnpike  
leaving a ~~small~~ small  
area of Ord. strata with  
red slate  $\frac{1}{4}$  mi. N. of  
the old "Checkered Horse"  
at the " " "  
it appears to cross near  
the road & then to swing  
a little to the west &  
on <sup>into</sup> the river leaving  
a few highly disturbed  
silicified & argill. rocks  
to the east & to the west  
the green & purple slates  
of the Cambrian - the latter  
being much ~~disturbed~~  
& contorted & standing up  
at high angles -  $70^{\circ}$  -  $80^{\circ}$



The western side of  
the Cambrian is pretty  
well fixed near  
Mount Cambridge but  
north of that it was not  
practicable until the  
time at hand to locate  
it nearer than given  
on the map. The  
greenish shaly slates of  
the Camb. & those of the  
Helderberg <sup>formation</sup> are so much  
alike that it is not  
certain where as much  
of the country <sup>rock</sup> is concealed  
by drift & soil where  
the fault line occurs.

The Troy & Lansingburgh  
strip of M.C. <sup>in Rensselaer Co.</sup> may run  
up into Eastern but nothing  
was seen of it as far  
south as Crandall's Corners.

10-1-86

The fault line between the  
C. & S. west of Granville.  
Lingers to the N.W. & passes  
a little W. of South  
Granville.

On the road from G. to S.G.  
remains of the Silurian  
clay beds of the 18d Gp.  
are seen dipping west &  
generally displaced. The  
red strata appear just  
N.E. of S. Granville &  
also S.W. of Granville.

10.2.86.

N. of Middle Granville the  
fault line passes north to



10-11-26  
East fault line of N.Y.

• The eastern side of the western Cambrian belt in passing across the Battenkill from Greenwich into Jackson continues its S.E. course until past the house of J. Coulter when it swings to the south down the valley towards Coila. Its course is not closely defined as an ~~open~~ <sup>area</sup> of drift ~~crosses~~ <sup>crosses</sup> the south end of the valley but from the presence of Middle Cambrian fossils on the west side & the siliceous layers of the Hudson River G. has the east it must pass very near the line drawn on the map.

10-6-86

• At Carter's Falls on the  
Pauliney River in the  
north part of Hampton  
the Canham crosses at  
the upper falls just below  
the bridge & the ~~Coleman~~  
Chazy crosses at  
the lower falls a short  
distance below.



9-28-86

South of N. Hartford  
about 2 miles a great  
mass of the Cambrian has  
been pushed westward &  
the strata are as or  
to strike N + S - The strata  
a little to the east striking  
N. 30° E.

North <sup>North</sup> NE of ~~N. E.~~ Hartford a  
similar displacement occurs  
the strata dipping 80° to the  
west.

These displacements show  
the close proximity to  
the fault & also give  
it an irregular contour.



10-12-86.

## Cambrian

The eastern belt of Cambrian rocks occupies most of the Township of Whitecreek. The eastern half of Salem & the southeastern corner of Weber passing into Vermont all along the eastern line of the canty up to Central Weber, ~~and~~

Its western & lower beds contain green & purple slates & a few interbedded limestones carrying Middle Cambrian fossils. Eastward from the localities given on the map nothing in the shape of a fault was observed.



C. Chazy - Trenton limestone.

As shown in Kingsbury,  
North Am - Hartford &  
Whitehall, Wash. Co. N.Y.  
the limestone may be  
replaced by shales and  
sand is the rule in relation  
to the Trenton limestone.  
In Kingsbury both the  
Trenton & Chazy are  
absent by non-deposition  
and in the limestone  
belt of Orange & Greenough  
the evidence of the thinning  
out of the limestone & the  
intercalation of shales  
among the limestones -

Crossing the section to the  
limestones of White Creek  
& Housick ~~the~~ we find  
that they are <sup>largely</sup> ~~one~~ <sup>limestone</sup> &  
intercalated with shales  
& arenaceous beds. The



clearer portions ~~are~~  
much interbedded, irreg-  
ularity & carry fossils - In  
southwest White Creek a  
layer of clean white  
crystalline limestone is  
the ~~former~~ western limit  
of the marble deposits.

The limestones are  
comparatively thin and  
form a narrow belt - where  
they pass beneath the shales -  
to the eastward.

Crossing to the limestones of  
Mt. Anthony a greater  
thickness of l- is met with  
and the marble is more  
prominent in the deposits  
among the arenaceous &  
bluish limestones. Fossils  
occurring in the latter.

This is representative of  
the marble belt & traced  
north & south the l-



thickens + the marble  
deposit becomes thicker.

Altho' changed by  
metamorphism the marble  
was a diff't deposit  
originally from the  
accompanying + intercalated  
limestones + to this it now  
loses its character.

(Work the above idea  
out in detail)

Localities of fossils  
in Washington Co.  
N.Y.  
1886.

Also distribution  
of Lacuna rocks.



10-11-86.

• Just south of the Center Falls  
bridge on the line of Easton  
Jackson a massive bedded  
cal-sd - some with  
thin bedded sd-shales &  
a few layers of bluish-black  
limestone. ~~Str.~~ N. 25° E.  
dip. 50° E.

In a gray l —  
found.

H. micans  
Micro - speciosus  
Olerellia asaphoides  
Salenoplena —

---

Passed over argl & sd  
shaly slates about 1 mile  
west to cross roads in Jackson  
about 1<sup>st</sup> S.S.W. of Battenville.

Found congl- & bedded  
l- in argl-shaly rocks  
Str. N. 25° E. dip 35° E.



From the l- obtained  
• fragment of A. asaphoides  
H. - Mercans - & heads  
of Salenopleria.

This outcrop is quite  
extensive & is ~~not~~  
~~far west~~ far the  
~~fault line between~~  
~~the Cambrian & Hudson~~  
~~River rocks.~~

Other outcrops of l-  
occur with M. C. F.  
fossils to beyond School  
House No. 2, where the  
fault line passes  
south along the east  
side of the road to Coila

About  $1\frac{1}{2}$  mi. N. of Coila  
a fine bluish-black l-  
contains a small  
Aboloid shell. Put  
it in the Cambrian



<sup>massive</sup>  
First l - east of  
Shushan 6 mi S  
West Arlington Bridge  
crossing Batten Kill  
~~at~~ South of Arlington VT.

N. side of road  
St. N. 30° E. dip about 30° E.

One hundred yards west  
a magnesian shale appears.  
dip E. about 40° E. Then a  
greenish argillaceous shale  
& a band of calcareous  
sandstone. Thence to the  
N.Y. & Vt. state line the  
green shales show ~~at~~  
~~at~~ intervals &  
in places are contorted  
& disturbed by concretion.  
About 2 mi S - an interbedded  
l - gives M.C. fossils.

Aletrichia (fragments)

Salenopleura (common fossils)

North from this point  
on the road to Salem  
outcrops of l. occur + 1 1/2  
miles south a minute  
search gave

*Orthis* sp.?

*Strophomena* *trayensis* -

*Hyalites* *communis*

H — *macra* •

*Orthis* —

North of Salem on the  
road to Hebron Cambrian  
l. occurs interbedded  
in the slates.



• About 6<sup>mi</sup> N. of Salem  
a massive bed of red  
slate occurs.

St. N. 87 E. Dip 40°.

---

9. 21-86

1<sup>mi</sup> N. of Shushan on the  
road to Lake Lauderdale  
an outcrop of l-occurs  
in greenish shaly slates  
Fossils -

*Clonellus* fragments

*Hyalitella* Mead

St. N. 20° E. Dip 45° E.

---

1 mi S. of Thurshan on the  
west side of the Batten Kill  
at Lobbins quarry the  
strike of the slates is N + S,  
dip 60° E.

Slates purple & greenish.

Analyzing the slate a belt  
of irregular limestone  
contains a strong Lymer Red  
Middle Cambrian fauna -

see collection

9-21-86,

---

2 1/4 mi East of Thurshan in  
long l - interbedded in  
greenish shaly shale found  
Atrypa fragments  
Solenopleura

---



9-20-86

1. mi N. E. of Salem limestone  
appearing any in 9 see note.

*Microdictya speciosa*  
" *bilobus*

*Alveolites* -

---

to gr shales etc

---

Slate a N. E. quarry at Salem  
St. N.  $35^{\circ}$  E, dip  $30^{\circ}$  E.

---

9-22-86

At a point on the East  
line ~~between~~ William  
Shaw's place and  
outcrop of Cambrian  
l., exposed carrying  
*Hyolithellus* *Micadus*  
*Chonetes* ———

Rupert Vermont,

The most easterly  
locality of Middle Cambrian  
yet discovered.



Rain. a.m.

9-23-56

at the quarries of green  
slate at West Pawlet &  
N. ~~that direction~~ the  
strike is  $N. 40^{\circ} E.$   $60^{\circ} E.$

East of the quarries a  
bed of purple slate occurs  
& also then close proximity  
to them.

Will study the section  
East - from Granville.

Crossed the Township of  
Granville on the road passing  
from S. Granville to North  
Hartford, leaving <sup>W. Pawlet</sup> VT, a band of red slates  
is crossed & then alternating  
beds of greenish - purple -  
dark & black shales & shales  
until  $\frac{3}{4}$  of a mile from  
the Vermont line an  
interbedded limestone zone  
fragments of *Abrellus*.



• many bits of fossils  
*Hyolithellus micans* etc.

Continuing west argil-  
& sandy shales with  
<sup>occasional</sup> interbedded calciferous  
strata extend for two  
miles when a limestone  
occurs that is Cambrian  
& contains *Abolella* —  
(Same species as north of John  
Huletts)

About  $1\frac{1}{2}$  miles to the  
west another fossiliferous  
l- occurs with many  
Middle Cambrian fossils.  
(See collection from near  
John Huletts).

Shales argil & sdy, calciferous  
sd & occasional bands  
of fossiliferous l- occur  
extend  $3\frac{1}{2}$  miles west.  
Middle Cambrian  
fossils were found 1 mi



•  $1\frac{3}{4}$  miles to  $2\frac{1}{2}$  mi. west  
of Pawlett, the last  
locality being about  $\frac{1}{4}$  m.  
east of North  
Hartford.

As far as I can  
determine from this  
reconnaissance no  
Hudson River gk. rocks  
occur between West  
Pawlett & North Hartford

but it is more than  
probable that they occur  
east <sup>west</sup> of the red slates.

9-27-86.

The massive belt of calcif.  
over sd - on the west  
side of D. W. Reid's farm  
(see section) crosses the  
road leading from S. Argyl  
church to Lake Gifford  
in Argyl. & at the Lake  
St. N.  $30^{\circ}$  E. dip? E

Limestone occurs in thin beds  
with the Calciferous sd -

Directly S. E. E. of Argyl -  
a high hill  
is composed of the Calciferous  
sd & impure sl - of the  
Middle Cambrian. The  
strike of the strata on  
the summit is N 4 S. &  
at the spot for E N.  $35^{\circ}$  to  $40^{\circ}$  E.  
Found fragments of  
*Obolus* / *asaphus* &



• Hyolithellus mucans -

To the north east the massive bedded Calciferous sd - ~~extends~~ shows outcrop ~~up to~~ for a mile or more & then disappears by the eastward coming of the fault line -

On the first east road south of N. Argyle the cherty l - shows in the fields on crossing the road (Str. N,  $40^{\circ}$  W. dip  $30^{\circ}$  E). It is massive bedded & the crinoid in places and extends ~~about~~  $\frac{1}{4}$  of a mile to the N. E. —

Section of Maclurea & a brachiopod, one well shown on the <sup>field site</sup> south of the road, <sub>side</sub>



1357

Sept 13<sup>13</sup> / 93

~~South~~ Cambridge & Warkin  
Co. N.Y.

Near mill on  
stream about 2<sup>1/2</sup> miles south  
of Center Cambridge P.O.

Limestone in crinoid-bearing  
masses in shales - also  
as interbedded layers.

The fossils were  
not examined closely.  
They are small, fragmen-  
tary and should be  
compared with those  
from 137 - if no distinct  
Cambrian species are  
found.

Sept 21<sup>13</sup> / 93

Found fragments of *Olenellus*  
& *Hyolithellus micans*.



136 / 93

Sept 9/93

1/2 mi N. of Eagle Bridge  
R.R. Station. Wash. Co. N.Y.

On south slope of hill facing  
Hosack Run. (1000 ft N. of wagon  
road)

*Uvulites*

*Microdictyon pulchellus*  
etc etc.

Going south the slate & quartz  
slates strike N 20° 25°  
E. Dip 45° - 70° W. - Toward  
Berkshire bridge the dip  
changes to east 40° - 60° &  
the rock is a greenish &  
grayish platy shale.

Just below Berkshire  
bridge the cleavage  
is east - Dip of strata  
20° west. S 1/2 N. 20° E.  
These beds are solid  
argillitic plates.

137.

Sept 11/93

Limestone interbedded  
in shales of the Hudson  
Group. Graptolites of the  
Normans Kill fauna  
occur a little <sup>below</sup> ~~above~~  
the limestone.

See fossils for species.

2 mi' N. N. E. of Battenville,  
Greenwich Washington Co  
N. Y.

First discovered by  
Oscar Left

Sept 13<sup>th</sup>

Collected more specimens at  
137. The Hudson graptolites  
occur about 25 feet below the  
interbedded limestones that  
carry a fauna of the Chazy  
type.



138.

Sept 12/98

Congl. & bedded limestone  
in dark shales - 100 yds  
S. E. of road side <sup>down</sup> hill  
slope, N. E. of Willard's  
Mts. just across brook from  
"Harrington Hill" (Easton, Wash. Co. N.Y.)  
*Hyalithes americana*  
*Microdiscus punctatus*  
*Olenellus* -

This is a narrow strip of  
Cambrian that extends south  
from the main mass of the  
Cambrian south of Greenwich  
& Middle Falls, about 1/2 mile  
on the west side of the road  
the limestone appears in an  
outcrop ~~to~~ on the east slope  
of the ridge east of Willard's  
Mts. Across the road on the  
west side about 100 yds

138. Can.

East of the road the Hudson  
cherts occur & in <sup>associated</sup> the  
black shales graptolites of  
the Norman Hill fauna.

West of the Canham locality  
the calcareous sandstone  
(gray light) shows on the  
slope of the ~~hill~~ hill



Found Hudson graptolites  
Norman Hill fauna on the top  
South spur leading down  
from the east side of the saddle  
on the summit. Also on the  
south slope about 200 yds  
north of the E & W. road.  
See map of Eastern



Limer Cambrian  
Washington  
Greenwich -

a fine exposure of  
the interbedded Cam-  
brian limestone occurs at  
Middle Falls, Greenwich  
where the Baller Kill  
cuts through, on the strike  
of the shales, slate  
& limestone. About  
200 feet of the section  
is exposed.

It is underlain by  
a massive bed of  
calcareous sandstone  
well shown on the  
north side of the road.

---

The geologic structure has  
not been worked & cannot  
well be with a topographic

map is available. There  
is considerable plication  
within each formation  
and complications of  
cleavage & jointing.



Washington Cir  
D.C.

1891

---

No. 1.

1

June 3<sup>d</sup> / 91

In ravine just east of N.  
Granville cemetery, Washin Co. N.Y.  
Dark gray slates with flattened  
annelid's trails. St. N, 15° E, D<sub>ip</sub>. 60° E  
The slates are siliceous and  
thin cherty layers occur at  
irregular intervals. The  
physical characters are  
those of Hudson formation.

On the opposite side of the  
little brook (east) the shaly slates  
extend for some distance and the  
strike is 150 feet or more in  
thickness of the section is exposed  
along up the brook.

June 4 / 91.

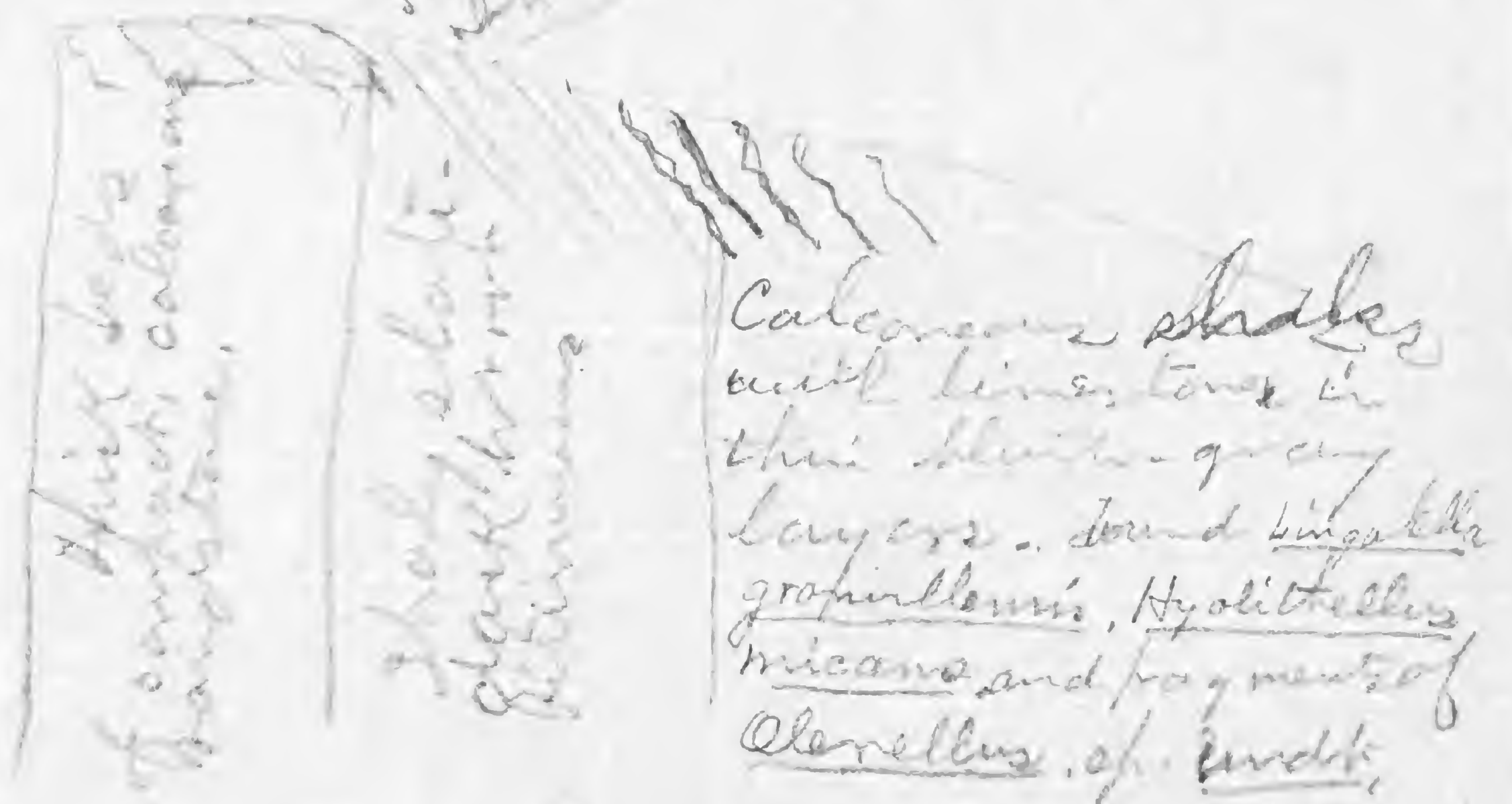
No. 2.

On road side ~~4 1/2~~<sup>4 1/2</sup> m. E. of North  
Granville, Washin Co. N.Y. Exposure  
on south side of road east of town



Tanners farmhouse \* on east  
slope of road.

Section looking north, down  
the road



Length of exposure about 100 ft.  
The fossils indicate the upper ~~lower~~  
lower Cambrian horizon - that occurs a  
mile south & also on the Mettawee  
river a little to the north.

No 3. In field on north side of  
road  $\frac{1}{4}$  mi. East of June 5<sup>th</sup>  
on road to Middle Granville.  
Argill. shales with calcareous  
small dark, flattened, shiny  
concretions <sup>these have fine vegetable remains,</sup>  
30 feet or more of

beds: st. N. <sup>3</sup> 150 E. dip 30 E to  
50 E along the strike owing  
to slight disturbance of the  
beds. Bunches or concretions  
of coal-like masses of calcareous  
sandstone occur in the shales.

No. 4. June 5/91.

Red slate quarry on east side of road  
about 300 yds south of the westward  
bend of the Mettomee River 2 mi N. of  
Middle Granville, Wash. Co. N. Y.

Red slate dip N + S. 10 E 35 E E.  
A fault with a hade of 60 E  
E. cuts off the red beds &  
brings green slates against the  
red by overthrust.

The cleavage of the slate  
appears to be about 30 from  
the bedding as seen in some  
pieces.





(4)

No 5. June 5/90. Graftalites-

On west side of road 300 yds north of Mettouse River bridge  $2\frac{1}{4}$  m' N. of Middle Granville. Just below a small culvert over the north road a little above where the N. E. road turns off.

Dark Argl - shale sh. N + S, dip 25° E.

In the shales found well marked Graftalites of the Normans River fauna.

25 feet down the little will the dark + green siliceous slates dip E. 60° S + S'. Red slates occur a short distance south on the east bank of a small brook.

June 6/91.  
No. 6. Siliceous slate, brownish-black  
to gray. with <sup>thin</sup> interbedded cherty layers  
St. N + S. Dip.  $45^{\circ}$  E. Outcrop small &  
in open field a short distance north-west  
of the <sup>end of ch</sup> road crossing the Mettawee at  
N. Granville. Much more extensive  
outcrops occur in the 2<sup>d</sup> field north.

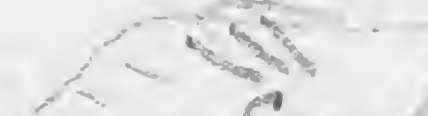
June 6/91.  
No. 7. Dark argl. - shale with  
graptolites. St. N + S. Dip.  $40^{\circ}$  E.  
See collection & add. list of species.  
Directly east of house of J. Dodge  
on crest of 2<sup>d</sup> outcrop on  
ridge east of road.

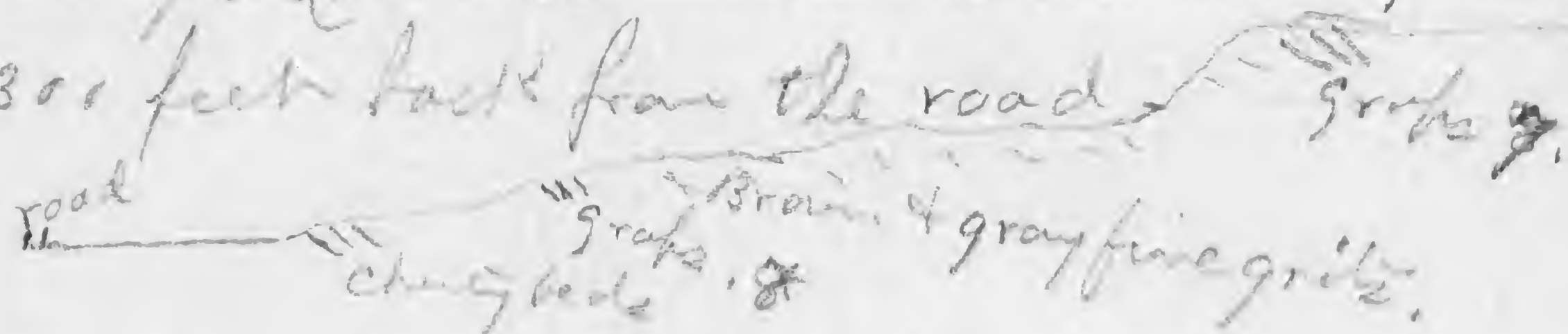
Species



No. 8.

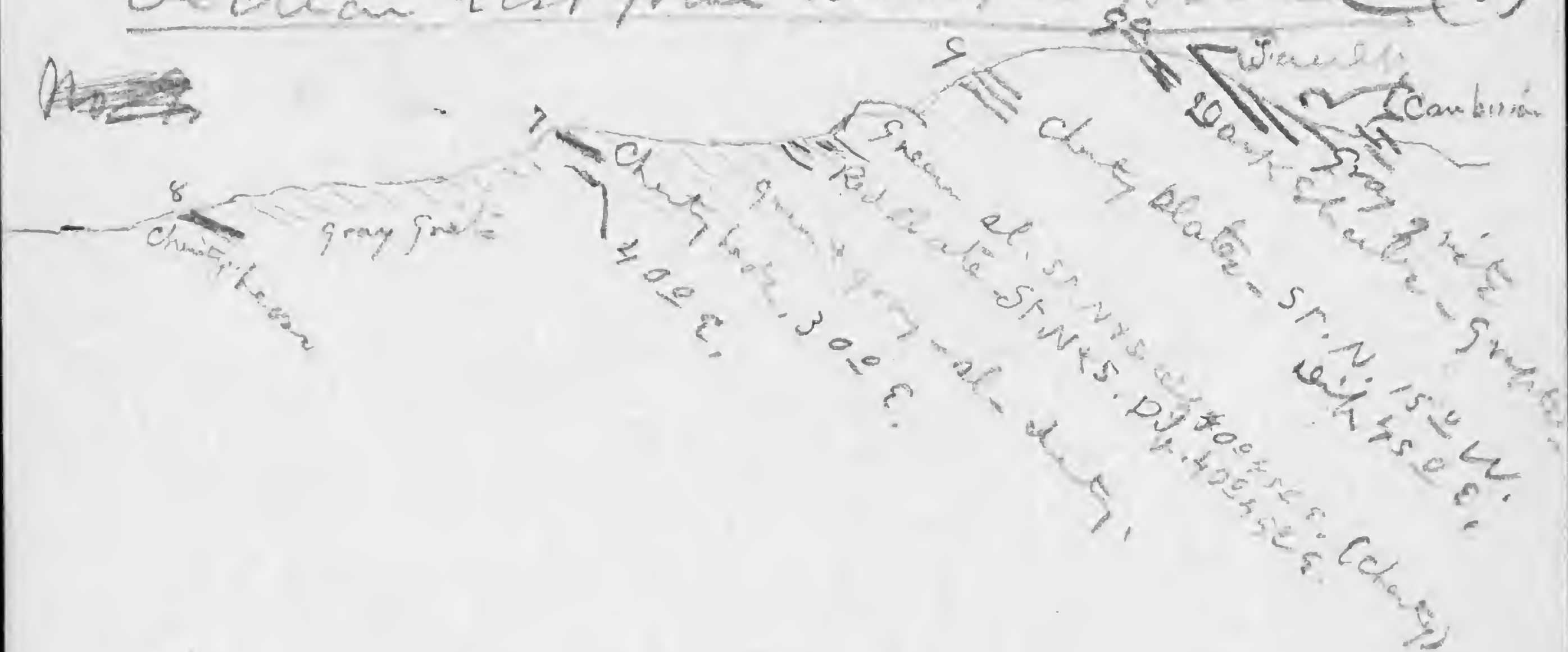
June 6/91.

Dark argl - shale with graptolites -  
in pasture east of the farm house of J.  
Dodge (the old Alvan Barber house), about  
300 feet back from the road.  Grapt.



List -

Section East from Hodges House (8)



These graptolite shales are cut off by  
a fault just east of 9a

No 9

June 6/91.

Dark shale interbedded in highly siliceous or cherty slates & greenish siliceous slates - On east crest of hill -  $\frac{1}{2}$  mi. East of J. Dodge's house &  $\frac{3}{4}$  mi. N. of N. Granville N. Y.

Groptolites occur in a narrow band. Strike of beds N. 15° E. W. Dip. 45° E.

9a Shales with fragments of groptolites about 75 feet east of 9. (over)  
(Califerous fauna?)

No 10.

June 6/91.

### Cambrian.

About  $\frac{3}{4}$  of a mile east of J. Dodge's House - & over the crest of the hill a coarse gray calcareous <sup>occurs</sup> ~~rock~~ <sup>It has</sup> many <sup>various</sup> veins of quartz & ~~these~~ <sup>these</sup> weather very irregular to a reddish brown rotten rock. It is well exposed north of the woods station 9. about 50 to 75 feet higher up a limestone containing fragments of



Aug 21<sup>st</sup> collected a  
lot of *Alcyonema* etc  
from this bed. A rich  
graptolitic fauna of  
Calceiferous (Pilot Lewis)  
age

a blue brecciated limestone and  
fragments of *Abnellers*.

~~About 150 feet high in~~

St. N. & S.  $2\frac{1}{2}$  55° E.

About 150 feet high in  
in the section a thin  
bedded limestone containing  
*Linnarssonina sagittalis* van  
*lacumia*, *Microdiscus cornex*,  
*Hyalithellus micans*.

*Ptychopora*, sp. and  
in conglomerate nodules  
*Abnellers* sp? *Hyalithes*  
*americanus* etc.



No 11, 1891

Cambrian

Aug. 8/91

North side Mettouse road  
East of St. Yvonne Bridge  
1/4 mi. South side of road  
Anticong quartzite with  
calcareous argillaceous shales  
above. In the latter  
noticed fragments of  
Obolus in decomposed  
portions.

On the north side of the  
road further east there is  
a E. extensive anticong of  
sandstone & overlying  
rough shales. Same  
go on strike in the  
bed of the Mettouse to the  
south

Cambrian

No 12/1891

Aug 8-

1/4 mi N. Louthville bridge  
along road north. The  
shale & slate strike N<sup>o</sup> 10<sup>o</sup>  
W. (mag) <sup>10<sup>o</sup> 30<sup>o</sup> 35<sup>o</sup> E</sup> across the road &  
outcroppings of limestone occur  
abundantly in the field on  
the west side of the  
road, across from a farm  
house on the east side.  
Limestone in bedded  
layers, a few minutes  
beaking developed  
Microdictyon punctatus  
Alveolus sp. 2. (fragments)  
+ fragments of Solenophera.

Bedded lm in stone



Cambridge

No 13/1891

Aug 8-

About 1<sup>mi</sup> N. of No 12, on  
summit of hill west  
of road, West of house  
of P. Ince. Map of Wash. Co.  
1867. Limestone outcrop

just south of woods in  
fracture. N.  $10^{\circ}$  W. (mag)  
dip, 30 to 50° E.

Found Murchisonia punctata  
fragments of trilobites as  
in No 12. Bedded in -  
in situ.

Nov. 1891.

Aug 21

Arrowsmith - argl - rough  
shaly beds with layers  
of ~~shaly~~ conchoidal, fine-  
grained sandstone. These  
weather out light-colored  
in contrast with the  
darker body of the ~~rock~~.  
ledge. To the westward  
the sandstone predominates  
forms a considerable  
portion of the terrace.  
This is shown in the N.E.S.  
hallway of its western  
side.



Ondover, Conn.

No 15/1891.

A little south of W.  
B. Washburns house  $\frac{1}{4}$  mi  
N. of the Granville line  
in the Township of  
Whitehall found graptolites  
in a dark slate beside  
the road. See 15 on map.  
+ specimen. Dictyonema  
of P. Probably Calaveras or  
pp Lewis fore. Red slate  
to the east.

Cambridge

No 16/91

East branch of road  
leading from N. Granville to  
Whitehall. Just south of  
Granville. Limestone line.  
Limestone crosses road -  
Found fragments of Abolles -  
of? Hyolithella micans -  
Abolles of?

In situ



No 17/91 Ord. - Aug. 17/91 -

Over the ravine a few  
hundred yards north  
of School House No 13, in the  
N.W. part of Granville -  
Washington Co. N.H. a bedded  
& brecciated lg occurs in the  
bed of the little brook  
flowing north (Or north it  
is represented as flowing south)  
The limestone is very thin  
bedded & occurs in plates -  
that dip east about 15°  
Up on the hillside to the  
west massive boulders  
of chert are seen that  
disappear to a redish rotten  
rock ~~on the~~. To the east  
slates form the hill  
side up to & across  
the road where a narrow  
belt of red slate occurs.

No. 18 / 1291.

Aug. 17/91

On the south side of small brook  
about  $\frac{1}{2}$  mi W. of road - west of 4. Stevens's  
farm - about  $\frac{1}{8}$  mi east of limestone  
ledge. Lenticular masses of  
gray limestone enclosed in <sup>dark</sup> ~~gray~~ slate <sup>enough to show surface</sup> containing  
Lower Cambrian fossils.  
Hyalites <sup>H. americana</sup> ~~convexus~~, Oolithus  
micans, Microdiscus punctatus,  
Olenellus (many fragments)

S. Eosh

3 mi S. W. of Village of White-  
hall, Wash'n Co. N.Y.



No 19/181

Aug 17/

Outcrop of Ord. limestone  
pelar (1/8 mile) No. 18.

Thick & thin bedded ~~bluish~~  
~~light~~ limestone. St. N. 40. E.  
(mag) dip 20° E. S. E.

Noticed sections of  
stromatopora — crinoidal  
columns & gastropods  
in bed of brook. The  
limestones are well  
shown on the hill to  
the north where they  
form a long ledge —

Up on the hill side  
about 200 yds to the S. E.  
the gray slate st. N. 48° E,  
dip 20, S. E., and of the  
brook, a short distance  
S. of an old house I saw  
the contact of the shales  
& limestone across the

bed of the brook. At this point there is a depositional contact. The argill-shales resting upon & conforming to the uneven surface of the limestone. Some thin beds of blue limestone are interbedded in the shale for a considerable distance above the massive limestone. Siliceous & arenaceous layers also occur higher up & the dip increases. Where the low marshy thicket ends & the brook flows from the open pasture land above the dip increases to 40° E & above the fence in the pasture to 55° E. S. 17° S.

Dark gray weathering slates that contain a few



No 19. (Can)

3

about 200 yards to the  
locality of lower Cambrian  
fossil (No 18).

The fault line  
between the Ordovician  
and Cambrian is not far  
from the line between  
the open pasture & the  
thicket that extends  
below along the  
brook.

About 5 mi' S. & E. of  
Whitehall village,  
Wash. Co. N.Y.

Nov. 20, 1891

Aug 17/91

Gray limestone bedded  
in slate in lane west  
of Lafayette Steiner house  
about 100 yds from main  
road, S. part Town-  
ship Whitehall, Wash. Co.  
N.Y.

In situ

Found Leptaena sagittalis  
var. tacoma, etc. etc.

Upper zone of Orthis formosa  
See collection.

Abursum S.E. of Whitehall,

A little to the north  
on the east side of  
the road. An old slate  
quarry showing the  
character of the slaty  
shales. From of Shuman  
1866.



No 21/1591.

Brook flowing into  
Nettanel <sup>river</sup> from the east  
about 4 <sup>mi</sup> S.S.E. of Whitehall  
village. Fine exposure  
of dark siliceous argill-  
shales in which the  
chazy limestones are  
imbedded.

Exp. 9. 25° 30°

---

a little to the ~~south~~  
~~to~~ the east of the road  
an old slate quarry  
shows the character  
of the higher beds.

Locum farm on map of  
1886.

No 22/91. (Ord)

Limestone outcrop  
South side of road about  
4 mi S.E. of Whitehall  
village. A good  
place to look for  
fossils. Noticed numerous  
sections of gastropods.

See No 24.



# Cambrian rocks

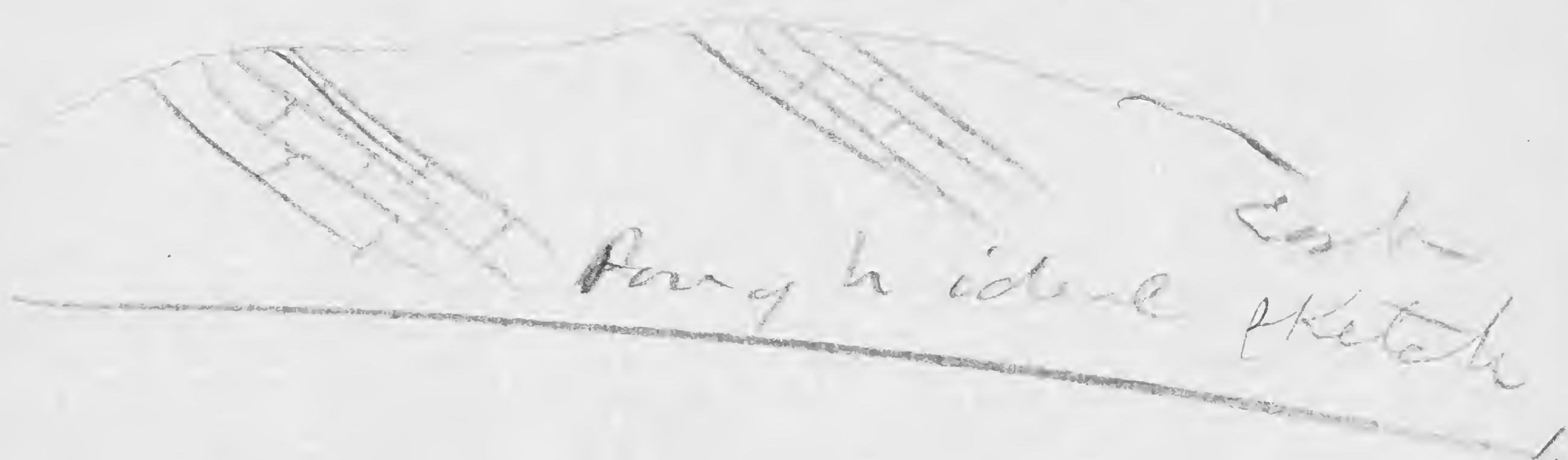
Wash. Co. N.Y.

Thinly bedded limestone & sandstone occur in the slates of the Cambrian of Wash. Co. & the limestones are almost invariably fossiliferous & fragments of fossils occur quite frequently in the sandstone. These nodules vary in size from  $\frac{1}{4}$ " to a mile or more in length & lie with their longer axis coincident with the bedding of the slates. They formed a solid strata in the soft mud when deposited & thus afforded a resting place for the organisms that lived in the surrounding waters.

No 23/91

Aug. 18

A good place to see the Ord.  
limestones interbedded  
in the shales -

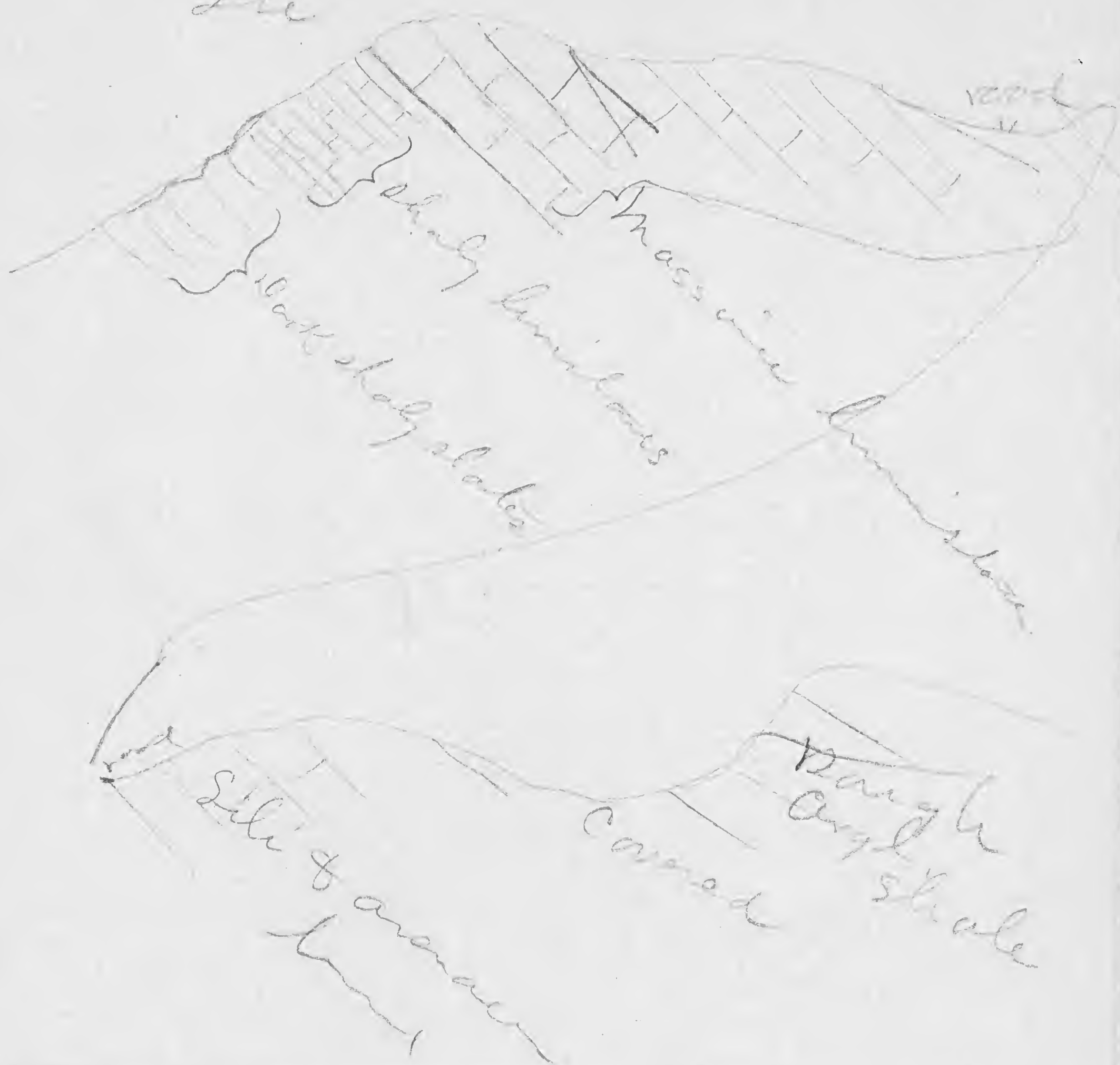


Township of Whitehall  
Wash. Co. N.Y.



No 24/91 -  
The

Aug 10/91



Three miles E.S.E. of  
Whitehall village. J. N. Wood  
farm, (1866). Limestone outcrop  
south of road, as in above  
sketch. Crossed road bedding  
south.

at the foot of the hill  
West of the Wood farm house

(No 24 (Can)

(2)

the contact of the limestone  
& superjacent shale is  
sharp.

The limestone series  
is about 300 feet thick  
(estimated).

This is a very  
good section to study this  
limestone belt. East of  
Gastrophys occur near the  
western side of the outcrop-  
low down in the section.

Where the exact line of the  
fault between the  
Carmy & Oriskany rocks is not  
known, except that it  
occurs in the meadow east  
of the limestone & first  
ridge of shale etc.